SECTION 07812

INTUMESCENT THIN FILM FIREPROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Prime paint and preparation.
   2. Exposed sprayed intumescent thin film fire-resistive materials.
   3. Topcoat.
   4. Sealer.
   5. Radiation tolerant application.

B. Applications include:
   1. Exposed to view paint finished application.
   2. Radiation Tolerant Application
   3. Concealed to view (unfinished) application.

C. Related Sections:
   1. Division 5 Section "Structural Steel" for steel substrate surfaces.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's product data for intumescent fireproofing product indicated.

B. Shop drawings in form of structural framing plans indicating the following:
   1. Where and what kinds of surface preparations are required before applying fireproofing.
   2. Extent of intumescent fireproofing for each different construction and fire-resistance rating including the following:
      a. Applicable fire-resistive design designations of inspecting and testing agency acceptable to authorities having jurisdiction.
      b. Minimum thicknesses needed to achieve required fire-resistance ratings of structural components and assemblies.
      c. Base all design designations on unrestrained members or submit designation of restrained and unrestrained conditions based on definitions in ASTM E-119, Appendix X3 as determined by a Structural Engineer licensed in Illinois.
   3. Treatment of fireproofing after its application.

C. Samples for Initial Selection: Manufacturer's color charts showing the full range of colors and glosses available.

D. Samples for Verification: Of each type of exposed finish required, prepared on 2 Samples, each 4 inches square on steel substrate, of each color, gloss, and material formulation to be applied. Where finishes involve normal color and texture variations, include Sample sets showing the full range of variations expected.

E. Test reports for fireproofing from a qualified independent testing agency employed and paid by Contractor or manufacturer. Provide reports indicating that physical properties of proposed intumescent thin film fireproofing products comply with specified requirements based on comprehensive testing of current product formulations according to the following requirements:

1. Testing is performed on fireproofing materials randomly selected from bags bearing the applicable classification marking of UL or another inspecting and testing agency acceptable to authorities having jurisdiction.
2. Testing is performed on specimens of fireproofing materials that comply with laboratory testing requirements specified in Part 2 and are otherwise identical in every respect to installed fireproofing including application of topcoats used in final application.
3. Qualified independent testing agency does testing on laboratory specimens that it witnessed during preparation and conditioning. Include in test reports a full description of preparation and conditioning of laboratory test specimens.
   a. Test reports without the above information are not acceptable.

F. Test reports for primers and other coatings applied to structural steel from a qualified independent testing agency employed and paid by Contractor indicating that primers and coatings proposed for application in shop or field are compatible with intumescent thin film fireproofing. Testing laboratory to determine compatibility as follows:
   1. By testing for bond per ASTM E-736 and requirements specified in UL "Fire Resistance Directory" about coating materials.
   2. By verifying that fireproofing manufacturer has not found primers or coatings to be incompatible with fireproofing based on its own laboratory testing or field experience.

G. Product certificates from fireproofing manufacturers that each intumescent thin film fireproofing product indicated for Project complies with specified requirements including those for fire-test-response characteristics and compatibility with adhesives, primers, and other surface coatings on substrates indicated to receive fireproofing.

H. Results from tests and inspections performed by PBC-employed independent testing agency will be reported promptly to Architect and Contractor.

I. Research reports or evaluation reports of the model code organization acceptable to authorities having jurisdiction showing that intumescent thin film fireproofing products comply with building code in effect for Project.

1.4 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: Provide intumescent thin film fireproofing identical to that used in assemblies tested by UL or another agency acceptable to authorities having jurisdiction as indicated below.
   1. Identification: Identify packages containing fireproofing with appropriate classification markings of testing agency.
   2. Fire-Resistance Ratings: As indicated by reference to fire-resistive designs listed in UL "Fire Resistance Directory," or in the comparable publication of another agency acceptable to authorities having jurisdiction, tested per ASTM E-119.
   3. Surface-Burning Characteristics: As indicated for each intumescent thin film-fireproofing product required, tested per ASTM E 84.

B. Installer Qualifications: Certified, licensed, or otherwise qualified by the intumescent thin film fireproofing manufacturer as having the necessary experience, staff, and training to install manufacturer's products per specified requirements. A manufacturer's willingness to sell its intumescent thin film fireproofing products to the Contractor or to an Installer engaged by the Contractor does not in itself confer qualification on the buyer.

C. Single-Source Responsibility: Obtain intumescent thin film fireproofing materials from a single manufacturer for each different product required.

D. Owner will employ and pay a qualified independent testing agency to perform field quality-control testing services specified in Part 3 of this Section.

E. Testing Agency Qualifications: To qualify for acceptance, an independent testing agency hired by Contractor or manufacturer to test intumescent thin film fireproofing products must demonstrate to Architect's satisfaction, based on evaluation of agency-submitted criteria

conforming to ASTM E-699, that it has the experience and capability to conduct satisfactorily the testing indicated.

F. Provide fireproofing products containing no detectable asbestos as determined according to the method specified in 40 CFR Part 763, Subpart F, Appendix A, Section 1, Polarized Light Microscopy.

G. Mockups: Before installing sprayed fire-resistive material, apply products specified to demonstrate aesthetic effects, where applicable, and qualities of materials and execution. Build mockups to comply with the following requirements, using materials indicated for completed Work:
   1. Locate mockups in the location indicated or, if not indicated, as directed by Architect.
   2. Extent of Mockups: Approximately 100 sq. ft. of surface for each product indicated.
   3. Notify Architect 7 days in advance of the dates and times when mockups will be constructed.
   4. Demonstrate the proposed range of aesthetic effects and workmanship, including patching.
   5. Obtain Architect's approval of mockups before starting application of product.
   6. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
      a. Approved mockups in an undisturbed condition at the time of Substantial Completion may become part of the completed Work.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to project site in original, unopened packages with manufacturers' labels identifying products legible and intact. Include on labels names of products and manufacturers, date of manufacture and shelf life, where applicable. Also include UL labels for fire-resistance ratings applicable to project.

B. Use materials with limited shelf life within period indicated. Remove from project site and discard any materials whose shelf life has expired.

C. Store materials inside, under cover, above ground and in a manner to keep them dry until ready to use. Remove from project site and discard any materials that have been exposed to moisture or have otherwise deteriorated.

1.6 PROJECT CONDITIONS

A. Environmental Conditions: Do not install fireproofing when ambient or substrate temperatures are 40 deg. F and falling, unless temporary protection and heat can be provided to maintain temperatures of both at or above this temperature level for 24 hours before, during and for 24 hours after application of sprayed fireproofing.

B. Ventilation: Ventilate spray fireproofing by means of natural or, where this inadequate, of forced air circulation during and after application until it dries thoroughly.

1.7 WARRANTY

A. Warranty: Submit a written warranty, executed by Contractor and cosigned by Installer, agreeing to repair or replace intumescent thin film fireproofing that has failed within the specified warranty period. Failures include but are not limited to the following:
   1. Cracking, eroding in excess of specified requirements, peeling, and delaminating of fireproofing from substrates due to defective materials and workmanship within the specified warranty period.

B. Warranty Period: 2 years from date of Substantial Completion.

1.8 SEQUENCING

A. Sequence and coordinate application of sprayed fire-resistive materials with other related work specified in other Sections to comply with the following requirements:
   1. Avoid unnecessary exposure of fire-resistive material to abrasion and other damage likely to occur during construction operations subsequent to its application.
   2. Do not begin applying fire-resistive material until clips, hangers, supports, sleeves, and other items penetrating fire protection are in place.
   3. Defer installing ducts, piping, and other items that would interfere with applying fire-resistive material until application of fire protection is completed.
   4. Do not install enclosing or concealing construction until after fire-resistive material has been applied, inspected, tested, and corrections have been made to defective applications.

PART 2 - PRODUCTS

2.1 EXPOSED INTUMESCENT FIREPROOFING

A. For exposed applications of sprayed fire-resistive materials, provide manufacturer's standard products complying with requirements indicated for material composition and for minimum physical properties of each product listed, measured by standard test methods referenced with each property.

B. Fire-Test-Response Characteristics: Provide sprayed fire-resistive materials with the following surface-burning characteristics as determined by testing identical products per ASTM E 84 by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.
   1. Flame Spread: 10 or less.
   2. Smoke Developed: 0.

C. Thin-Film Intumescent Fire-Resistive Material: Factory-mixed coating system, spray applied as thin-film coating, as follows:
   1. Multicomponent system consisting of intumescent base coat and topcoat.

D. Colors and Gloss: Match Architect’s sample; coordinate with paint specified in Section 09900 so there will be color and sheen match between intumescent fireproofed steel and adjacent non-fireproofed steel.

E. Products: Subject to compliance with requirements, provide one of the following:
   1. Thin-Film Intumescent Fire-Resistive Material: Primer, fire resistive material and topcoat:
      a. Firefilm and Colorcoat; A/D Fire Protection Systems, Inc.
      b. Nullifire S606; Carboline Co., Fireproofing Products Div.
      c. Cafco Sprayfilm Basecoat and Topseal; Isolatek International Corp., Cafco Products.
      d. **Albi-Clad TF; Albi Manufacturing; Division of StanChem, Inc.**

F. Substrate Primer: For use on steel and with intumescent fire-resistive product, provide primer that complies with the following requirements:
   1. Primer's bond strength complies with requirements specified in UL's "Fire Resistance Directory" for coating materials based on a series of bond tests per ASTM E 736.
   2. Primer is identical to those used in assemblies tested for fire-test-response characteristics of sprayed fire-resistive material per ASTM E 119 by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.
   3. Recommended by the thin-film intumescent fire resistive material manufacturer.

G. Radiation Tolerant Application: Where intumescent thin film fireproofing is indicated to comply with radiation tolerance and decontaminability, provide intumescent thin film fireproofing with two coats epoxy finish, 4.0 - 5.0 mil per coat dft. Finish shall comply with ANSI N5.12 for radiation tolerance and decontaminability.
   1. Intumescent Thin Film Fireproofing: Nullifire S606; Carboline Co.; thickness 79 mils.

2. Coating Manufacturer/Product: Epoxy coating; Carboline; Carboguard 890.
   a. Primer/First Coat: Epoxy coating.
   b. Top Coat: Epoxy coating
   c. Color: As selected by Construction Manager)

H. **Concealed or Unfinished Application (Unpainted): Where intumescent thin film fireproofing is indicated to remain unfinished provide intumescent thin film fireproofing.**
   1. **Intumescent Thin Film Fireproofing: Albi-Clad TF; Albi Manufacturing; Division of StanChem, Inc.**

2.2 ACCESSORIES

A. Provide auxiliary fire-resistive materials that are compatible with sprayed fire-resistive materials and substrates and are approved by UL or another testing and inspecting agency acceptable to authorities having jurisdiction for use in fire-resistive designs indicated.

B. Reinforcing Fabric: Glass-fiber fabric of type, weight, and form required to comply with fire-resistive designs indicated, approved by manufacturer of intumescent fireproofing.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, to determine if they are in satisfactory condition to receive intumescent fireproofing. A substrate is in satisfactory condition if it complies with the following:
   1. Substrate complies with requirements of the section in which the substrate and related work is specified and is free of oil, grease, incompatible primers, dirt or other foreign substances capable of impairing bond of fireproofing with substrate under conditions of normal use or fire exposure.
   2. Objects which will penetrate fireproofing, including clips, hangers, support sleeves and similar items have been securely attached to substrates.
   3. Substrates are not obstructed by ducts, piping, equipment and other construction that could interfere with application of spray fireproofing.

B. Do not proceed with installation of fireproofing until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean substrates of substances which might be incompatible with or interfere with bond of fireproofing, including oil, dirt, scale, rust and incompatible shop primer. Remove ill-timed work which might interfere with installation of fireproofing.

B. Repair substrates to remove any surface imperfections that could affect uniformity of texture and thickness in finished surface of fireproofing. Remove minor projections and fill voids which would telegraph through.

C. Cover other work which might be damaged by fall-out or over-spray of fireproofing materials during spraying operations. Provide temporary enclosure as may be required to confine operations, protect the environment, and ensure adequate ambient conditions for temperature and ventilation.

3.3 INSTALLATION, GENERAL

A. Comply with manufacturer's instructions for particular conditions of installation in each case. Consult with manufacturer's technical representative for conditions not covered by printed instructions.
   1. Apply manufacturer's recommended prime paint.

B. Extend fireproofing full thickness over entire area of each substrate to be protected. Apply coats of intumescent fireproofing at manufacturer's recommended rate to achieve dry film thickness required.

C. Apply fireproofing in thicknesses and densities required to achieve fire resistance ratings designated for each condition.

D. Apply fireproofing materials by sprayed-on method to maximum extent possible. Following spraying operation in each area, complete the coverage by roller application or other method acceptable to manufacturer.

E. Provide a uniform finish complying matching approved samples.

3.4 FIELD QUALITY CONTROL

A. Testing Laboratory: Owner will employ and pay a qualified independent testing laboratory to perform field quality control testing of fireproofing.

B. Extent and Testing Methodology: Arrange for testing of completed fireproofing by magnetic thickness gage in accordance with SSPC-PA 2.

C. Testing Laboratory shall report test results promptly and in writing to Contractor and Architect.

D. Repair or replace fireproofing within areas where test results indicate fireproofing does not comply with requirements.

3.5 CLEANING, REPAIR, AND PROTECTION

A. Cleaning: Immediately upon completion of spraying operations in each containable area of project, remove over-spray and fall-out of materials from surfaces of other work and clean exposed surfaces to remove evidence of soiling.

B. Protect fireproofing according to advice of fireproofing manufacturer and Installer from damage resulting from construction operations or other causes so that fireproofing will be without damage or deterioration at time of Substantial Completion.

C. Coordinate installation of fireproofing with other work in order to minimize the need for other trades to cut or remove fireproofing. As other trades successively complete installation of their work, maintain protection of structure afforded by fireproofing by patching any areas which have been removed or damaged prior to concealment of fireproofing by other work.

D. Repair or replace work, which has not been successfully protected.

END OF SECTION 07812